

SYNCHRO SETTE

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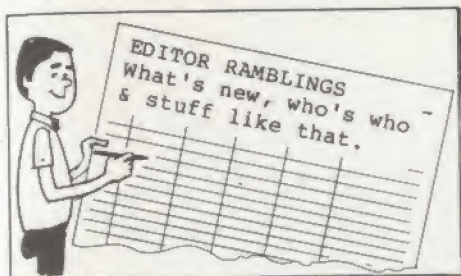
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SYNCHRO-SETTE: THE
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FOR THE TS /1000 AND ZX 1000
MIRCOCOMPUTERS

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TS-1500 NEWS

A rumor has been making the rounds that Timex has dropped the TS-1500 model before it has even been introduced on the market. The logic to the rumor is that since the TS-2000 will be introduced shortly after, the marketability of the 1500 will be short lived and will soon acquire obsolescence.

This is definitely not the case. Timex feels that the TS-1500 will still have its place in society among those that are students, want to enlighten themselves to the computer world before purchasing a more expensive system for their needs, or just first-timers in general. Timex plans to only manufacture a limited amount at first to test the market. If it sells, more will be made available in greater quantities. Sears is planned to be a major outlet.

TS-2000 NEWS

The 16K version of the 2000, however, will probably never be sold in the U.S. Latest word has it that Timex plans to market the 48K version only unless a demand is recognized for the 16K at a later time.

Either immediately or soon after, a device will be available to expand the RAM capability of the 2000 to 256K.

Rumors of hard-disk drives being under development for the 2000, along with an 80 column

thermal printer, have yet to be verified.

Still no word on an ink-printer or parallel printer interface for the 2000 from either Timex or any supporting company. This seems to be the last stumbling block to whether the 2000 will be a serious threat to the small business computer market. I'm sure that if Timex won't offer one, some enterprising company will.

MEMOTECH COMPUTER

Memotech has announced their own entry into the microcomputer market. As you probably already know, Memotech has offered for quite some time a line of quality hardware products highlighted by their noise-free RAMPacks. Memotech was the first, to my knowledge, to offer a 64K RAMPak for the ZX/TS machines.

The MTX-512 World Class Computer includes the following:

- ... Z-80A microprocessor running at 4MHz
- ... 80K user RAM expandable to 512K
- ... 16K dedicated video RAM inclusive of user RAM
- ... Cartridge capability
- ... 16K ROM with Oxford BASIC, LOGO type commands, Z-80 assembler/disassembler; Z-80 register, memory & program display plus manipulation routines and a Terminal Emulator.
- ... 79 key typewriter style keyboard with auto-repeat, numeric keypad, 2 reset keys that must be pushed simultaneously, 8 user-definable function keys (expandable to 16), upper/lower case, 26 graphics & user definable characters and optional foreign language character sets.
- ... color TV or monitor display output with 40 x 24 char/line

display and optional 80/24 format. 256 x 192 pixel resolution with 16 colors and 32 sprites.

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... 2500 baud cassette interface (compared to 300 baud for the 81/1000/1500 and 1500 baud for the 2000)

The MTX-512 unit sells for \$595.00 and is pictured on the cover of this magazine. For more information, contact:

Memotech Corporation
7550 W. Yale
Denver, CO, 80227
(303)986-1516

----- SPECTRUM/TS-2000 COMPATABILITY

We have received some very reliable information telling us that the Spectrum and TS-2000 have some incompatibilities. We are aware of additional features, such as the cartridge interface. But we don't know if these incompatibilities apply to the BASIC language, software loading and saving, or what.

Stay tuned - we will forward information as soon as it is available.

----- SINCEREST FORM OF FLATTERY

This is what they say imitation is. Have you seen Radio Shack's MC-10 micro color computer yet? It has eight colors, sound effects, 4K of RAM (expandable to 16K) and "single keystroke entry of commands" for the price of \$119.95.

Actually, Radio Shack offered a shorthand form of BASIC in the first version of the Model 1. The single keystroke entry has proved valuable in two areas: ease of learning and memory efficiency. I believe this is Radio Shack's bid to compete with the TS-2000 and jump into the market before Timex.

Although I haven't worked with the MC-10, I'm sure it is an excellent product, judging by their other computers. But keep in mind this is one of their "low end" computers whereupon the TS-2000 will be the "top-of-the-line" computer from Timex.

The proof of the pudding will be the expandability of the two units. From what we have heard, the TS-2000 will have almost "main-frame" capabilities. I doubt if Radio Shack will allow the MC-10 to expand to much more than 16K with cassette program storage. Even now, it is projected as a computer for the "first time user" or "hobbyist".

----- MICRO PRICE WAR AFTERMATH

Manufacturers of Atari and Intellivision microcomputers have experienced severe multi-million dollar losses during the last quarter of this year to join Texas Instruments as loss-leaders in the industry. Timex and Radio Shack have also shown disappointing sales figures since the first quarter.

Only Commodore is enjoying healthy sales. This is due primarily to the Model 64 being discounted to the \$200 level. One shop is saying that over thirty 64s are being sold to one of the next best seller.

Word has it that Commodore can even discount the 64 even further - as much as 35% and



MINI DATABASE

Have a little time on your hands? Typing in this program ought to keep you busy for an evening.

Perhaps you have been turned off by data programs that limit the amount of characters that can be entered into any of the data fields. The problem with such programs is two-fold.

1. The variables to be entered have to be dimensionalized as to their maximum size and to show how many there are. If a variable arises that requires more space than has been assigned to it, the program will truncate (chop off) any characters past the limit.

2. When variables are shorter than the dimensionalized size, the program puts enough blank spaces at the end of the variable to make up the difference. This, of course, wastes precious memory space.

"DATABASE" is a program that

"DATABASE" is a program that will store data efficiently with absolutely no wasted space other than the code numbers used for co-ordinate pointers.

This program creates a single string variable <A\$> that constantly allows data to be manipulated. The string has the following characteristics:

- is increased in size when data is entered
- is decreased in size when data is deleted
- allows data to be edited
- performs a data search when needed

This program is not a full-blown Data-Base as it does not allow sorting or numeric totalling. It is also not written as efficiently as it could be regarding its size. This was done purposely to allow the user to observe the flow of the program's logic.

The secret to the programs use lies in the character codes used as pointers. If you turn to the Sinclair Character Code section of your manual, you will notice that a large portion of these codes are labeled "NOT USED". Other programs we and others have used in the past, might have used characters such as "*", "/" and others as pointers that instruct a program during a search through a string, to break out and branch to another routine.

The "NOT USED" codes, such as those between 67 to 111, appear on the screen as question marks. Try this sample program:

```
10 FOR N = 67 TO 111
20 SCROLL
30 PRINT N, CHR$(N)
40 NEXT N
```

Yet they have definite characteristics that we can utilize. The data entry is kept to five fields. If this program

were to be used as a general information program, such as to find information from periodicals, we might use the following:

SUBJECT - any word or phrase that would pertain to the information about to be entered

ITEM 1 thru 3 and LAST ITEM - this could be the name of the periodical, issue date, page # and any additional information about the subject.

The usefulness of a data-base program is that it is not dedicated to just one set of circumstances. It can be used as a telephone, name & address program, for inventory, recipes, test grades, etc.

KEYWORD SEARCH

When the data is entered, a search can be performed to extract the complete data block with just the entry of a keyword. Picture all the data that you will enter as being a line of boxes with a single character occupying each box. The first box in the string has the character code 111 in it. Data that is entered and terminated by pressing the ENTER key, has its characters put into these boxes in a straight line. The next box after that portion has one of the character codes from 67 to 70 inserted into it, starting with 67. After the last data item is entered, character code 111 is inserted. The process then repeats itself until no more data is to be entered.

The search by keyword examines the entire <A> string until the keyword is located. Another search is then performed both forward and backward, looking for the 111 codes. When they are found, this section is duplicated into a different variable in which another routine using the same

techniques, breaks apart into the five separate fields.

DELETION OF BLOCKS

The block deletion works the same way as the search but removes the unwanted section of characters and pushes the two end sections together.

EDITING FIELDS

In this mode, a search routine locates the desired block, breaks it down into the five fields and allows one field at a time to be removed with a new field put in its place. The block then has the two portions of the remaining <A> string attached at each side.

This program will allow as much data to be entered as memory allows. Preliminary tests show over 12,000 characters to be about the limit for a 16K machine. As more data is entered, search routines will require more time to locate the newest data.

```

10 LET A$=CHR$ 111
110 FAST
120 CLS
130 PRINT AT 1,10,"MINI DATABASE"
140 PRINT AT 1,0,"TO ENTER DATA"
150 PRINT AT 2,0,"TO DELETE DATA"
160 PRINT AT 3,0,"TO EDIT DATA"
170 PRINT AT 10,0,"TO SEARCH FOR"
180 PRINT AT 12,0,"TO SAVE DATA"
190 PRINT AT 21,0,"ENTER ONE OF"
200 SLOW
210 PRINT AT 21,0,"ENTER ONE OF"
220 LET Y$=INKEY$
230 IF CODE Y$=29 OR CODE Y$=34
240 THEN GOTO 210
250 FAST
260 CLS
270 GOTO VAL Y$*1000
280 REM DATA ENTRY
290 PRINT
300 PRINT "SUBJECT?"
310 SLOW
320 INPUT B$
330 PRINT B$
340 IF B$=A$ THEN GOTO 100

```

```

1060 LET A$=A$+B$+CHR$ 67
1070 PRINT "ITEM NO. 1?"
1080 INPUT B$
1085 PRINT B$
1090 LET A$=A$+B$+CHR$ 68
1100 PRINT "ITEM NO. 2?"
1110 INPUT B$
1115 PRINT B$
1120 LET A$=A$+B$+CHR$ 69
1130 PRINT "ITEM NO. 3?"
1140 INPUT B$
1145 PRINT B$
1150 LET A$=A$+B$+CHR$ 70
1400 PRINT "LAST ITEM?"
1410 INPUT B$
1415 PRINT B$
1418 PAUSE 100
1420 LET A$=A$+B$+CHR$ 111
1430 GOTO 1000
2000 REM DELETE DATA BLOCK
2010 PRINT AT 10,0;"ENTER KEYWORD OF DATA TO BE DELETED"
2020 SLOW
2030 INPUT C$
2040 FAST
2050 FOR N=1 TO LEN A$-LEN C$+1
2060 IF A$(N TO N+LEN C$-1)=C$ THEN GOTO 2200
2070 NEXT N
2080 CLS
2090 PRINT AT 10,0;"DATA NOT IN FILE"
2100 PAUSE 500
2110 CLS
2120 GOTO 100
2200 FOR A=N TO 1 STEP -1
2210 IF CODE A$(A)=111 THEN GOTO 2230
2220 NEXT A
2230 FOR B=N TO LEN A$
2240 IF CODE A$(B)=111 THEN GOTO 2260
2250 NEXT B
2260 CLS
2270 PRINT "A$(A+1 TO B-1)"
2280 PRINT "IS THIS THE DATA BLOCK YOU WANT DELETED?"
2290 PAUSE 40000
2300 IF INKEY$="N" THEN GOTO 2070
2310 LET A$=A$( TO A)+A$(B+1 TO LEN A$)
2320 GOTO 100
3000 REM EDIT DATA
3010 PRINT "ENTER KEYWORD?"
3020 SLOW
3030 INPUT C$
3040 FAST
3050 FOR N=1 TO LEN A$-LEN C$+1
3060 IF A$(N TO N+LEN C$-1)=C$ THEN GOTO 3100
3070 NEXT N
3080 GOTO 2030
3100 FOR A=N TO 1 STEP -1
3120 IF CODE A$(A)=111 THEN GOTO 3140
3130 NEXT A
3140 FOR B=N TO LEN A$
3150 IF CODE A$(B)=111 THEN GOTO 3170
3160 NEXT B
3170 LET D$=A$(A+1 TO B-1)
3175 GOTO 3800
3180 FOR I=1 TO LEN D$
3190 IF CODE D$(I)=67 THEN GOTO 3210
3200 NEXT I
3210 CLS
3220 PRINT "SUBJECT IS ";D$( TO I-1)
3230 PRINT "ENTER NEW SUBJECT OR PRESS ENTER FOR NO CHANGE?"

```

```

3240 SLOW
3250 INPUT E$
3260 IF E$="" THEN LET E$=D$( TO I-1)
3265 LET D$=E$+D$(I TO LEN D$)
3270 FAST
3275 LET F$=E$+CHR$ 67
3280 CLS
3290 LET C=I+1
3300 FOR I=C TO LEN D$
3310 IF CODE D$(I)=68 THEN GOTO 3330
3320 NEXT I
3330 PRINT "ITEM 1 IS ";D$(C TO I-1)
3340 PRINT "ENTER NEW ITEM OR PRESS ENTER FOR NO CHANGE?"
3350 SLOW
3360 INPUT E$
3370 IF E$="" THEN LET E$=D$(C TO I-1)
3380 LET F$=F$+E$+CHR$ 68
3390 FAST
3400 CLS
3410 LET C=I+1
3420 FOR I=C TO LEN D$
3430 IF CODE D$(I)=69 THEN GOTO 3450
3440 NEXT I
3450 PRINT "ITEM 2 IS ";D$(C TO I-1)
3460 PRINT "ENTER NEW ITEM OR PRESS ENTER FOR NO CHANGE?"
3465 SLOW
3470 INPUT E$
3480 IF E$="" THEN LET E$=D$(C TO I-1)
3490 LET F$=F$+E$+CHR$ 69
3500 FAST
3510 CLS
3520 LET C=I+1
3530 FOR I=C TO LEN D$
3540 IF CODE D$(I)=70 THEN GOTO 3560
3550 NEXT I
3560 PRINT "ITEM 3 IS ";D$(C TO I-1)
3570 IF E$="" THEN LET E$=D$(C TO I-1)
3575 SLOW
3580 INPUT E$
3590 IF E$="" THEN LET E$=D$(C TO I-1)
3600 LET F$=F$+E$+CHR$ 70
3610 FAST
3620 CLS
3630 LET C=I+1
3640 PRINT "LAST ITEM IS ";D$(C TO LEN D$)
3650 PRINT "ENTER NEW ITEM OR PRESS ENTER FOR NO CHANGE?"
3655 SLOW
3660 INPUT E$
3670 IF E$="" THEN LET E$=D$(C TO LEN D$)
3680 LET F$=F$+E$
3690 FAST
3700 CLS
3710 LET A$=A$( TO A)+F$+A$(B TO LEN A$)
3720 GOTO 100
3800 CLS
3810 PRINT "D$";
3820 PRINT "IS THIS THE CORRECT DATA BLOCK?"
3830 PAUSE 40000
3840 IF INKEY$="Y" THEN GOTO 3180
3850 GOTO 3070
4000 REM KEYWORD SEARCH
4010 CLS
4020 PRINT AT 10,0;"ENTER KEYWORD"

```




the Computer Tutor

FLOATING SCREEN MEMORY MAP - Part 2 -

Greetings Class! I'm surprised to see so many of you here. Isn't this heat something? We'll try to keep today's lesson short.

Perhaps you experimented with the effects demonstrated in the last session. To review that lesson, we can recall that the versions of the ZX/TS computers with at least 16K of RAM memory have the capability to directly correlate what is happening on the screen with what is happening in certain portions of the computer's random access memory locations.

This is, of course, true with most computers - but, unlike most other computers, the RAM area that holds the screen information is not stationary or in the same place all the time. The location of this RAM area is in direct proportion to the size of the program residing in memory at that time.

Hence-forth, we say that the

the map or screen co-ordinate positions, float.

We have seen how we could take advantage of this knowledge by writing a routine that would copy the contents of the screen directly to the printer: - INCLUDING THE BOTTOM TWO LINES.

In today's lesson, I would like to demonstrate moving graphics in the form of a game where the keyboard directly correlates the contents of the screen.

In the past, you may have seen games written in BASIC where the user fires a projectile at a moving object. While the projectile is in flight, the object stops and waits for the projectile to hit it or go by. Many people have asked me, "why not make the game more difficult and have the object and projectile move at the same time?".

Routines can easily be written to make this happen. Does anyone know why it usually isn't done? Yes, the gentleman in the rear has his hand up?

He says that it is because the two objects are moving at right angles to each other and any routine would have difficulty correlating their positions to tell when a "hit" occurs.

As usual, the answer is totally incorrect!

The real reason is that the double movement slows down the movement process where the flight simulation takes a longer period of time. By POKing and PEEKing the screen, this process can be speeded up somewhat. Enter the following program:

```
10 LET S=0
20 GOSUB 5000
30 LET I=743
40 LET A=0
50 LET G=0
```

```

1000 REM LEFT TO RIGHT
1005 FOR N=398 TO 427
1010 LET A$=INKEY$
1020 IF A$(">") THEN LET A=1
1030 GOSUB 6000
1035 POKE XX+N-1,0
1040 POKE XX+N,128
1060 NEXT N
1070 LET G=G+1
1080 IF G>10 THEN GOTO 8000
1090 PRINT AT 1,20;"PASSES = ";G
1100 REM RIGHT TO LEFT
1110 FOR N=427 TO 398 STEP -1
1120 LET A$=INKEY$
1130 IF A$("<") THEN LET A=1
1140 GOSUB 6000
1145 POKE XX+N+1,0
1150 POKE XX+N,128
1170 NEXT N
1180 LET G=G+1
1190 IF G>10 THEN GOTO 8000
1200 PRINT AT 1,20;"PASSES = ";G
1210 GOTO 1000
5000 REM FIND SCREEN LOCATION
5010 LET XX=PEEK 16396+256*PEEK
16397
5020 RETURN
6000 REM SHOOTER ROUTINE
6010 IF A=0 THEN RETURN
6020 IF PEEK (XX+I)=128 THEN GOT
0 7000
6030 POKE XX+I,136
6040 POKE XX+I+33,0
6050 LET I=I-33
6070 IF I>50 THEN RETURN
6080 LET A=0
6090 POKE XX+33+I,0
6100 LET I=743
6110 LET G=G+1
6120 RETURN
7000 REM BLOW-UP ROUTINE
7001 PAUSE 10
7005 FOR N=1 TO 10
7010 POKE XX+I-34,128
7020 POKE XX+I-33,0
7030 POKE XX+I-32,128
7040 POKE XX+I+1,0
7050 POKE XX+I+34,128
7060 POKE XX+I+33,0
7070 POKE XX+I+32,128
7080 POKE XX+I-1,0
7090 POKE XX+I-34,0
7100 POKE XX+I-33,128
7110 POKE XX+I-32,0
7120 POKE XX+I+1,128
7130 POKE XX+I+34,0
7140 POKE XX+I+33,128
7150 POKE XX+I+32,0
7160 NEXT N
7170 CLS
7180 LET S=S+1
7190 LET I=743
7200 LET A=0
7210 LET G=G+1
7220 IF G>10 THEN GOTO 8000
7230 GOTO 1000
8000 REM SCORE DISPLAY
8005 PRINT AT 1,0;"SCORE = ";S+1
8010 PAUSE 40000
8020 CLS
8030 RUN
9998 SAVE "XX"
9999 RUN

```

The trick to getting the most speed is to have the least amount of program lines in the FOR/NEXT loops while the INKEY\$ is in effect. The program has all of it's routines categorized with REMarks. The "XX" variable from the 5000 routine determines the screen's location.

The 1000 and 1100 routines provide the movement of the object by POKEing the screen location with the code 128 and POKEing the location where the object appeared previously with a 0 which erases the old object. Therefore, the illusion of movement is achieved.

By following the logic of the program, you will notice that although all of the moving graphics are POKed to the screen, in line 6020, the single PEEK in the program occurs where if the next location that the projectile is about to enter has a "128" (the character code for the moving graphic block) in it, the program will branch to the 7000 routine which provides the "blow-up" graphics.

The "shooter" routine starting with line 6000 works pretty much the same way as the 1000/1100 routines work except to provide vertical movement rather than horizontal.

I'm going to let you out early today but I do want you to consider this homework assignment!

Write a routine that would allow only a certain portion of the screen to be copied to the printer. This routine should allow the user to set the co-ordinates of what portion of the screen is to be copied.

Class dismissed!



ELEMENTARY INSTRUCTION

In last month's session, we made reference to the book *STARTING FORTH* by Leo Brodie. On page 60 is a routine that creates a large letter "F" out of asterisks. A similiar program to create a large letter "E" from dollar signs reads as follows:

```
0 ( LARGE LETTER-E)
1 : START EOFF CLS ;
2 : DOLLAR 36 EMIT ;
3 : DOLLARS 0 DO DOLLAR LOOP ;
4 : MARGIN CR 16 SPACES ;
5 : X1 MARGIN DOLLAR ;
6 : X2 MARGIN 10 DOLLARS ;
7 : E START X2 X1 X1 X2 X1 X1 X2
;
```

You will notice that there are line numbers, similar to a basic program. The program, if executed on most FORTH machines, would produce a large letter "E" indented 16 spaces. This will not occur on the ZX/TS machines however with the TREE-FORTH chip. The program works equally well with or without line numbers on the ZX/TS computers. Line numbers make it easier to visualize.

The reason is because, although the word (command) SPACE and SPACES are defined in the command dictionary of other FORTH interpreters, they do not exist in Tree Forth's PluriForth version.

This does not mean that it can't be done. All we have to do is define these two commands and insert them into the "dictionary".

Let us examine the program first so that we can understand how it works. The computer would first be put into the "editor" mode by pressing the SHIFT and "1" keys.

Line #0 is formatted in a manner that works like the REM statement in BASIC. The parentheses tell the computer to ignore what is inside them. In line #1, a routine called START uses EOFF to unlock the bar that separates the 2 screens (editor and execution) and CLS clears the screen completely.

Line #2 tells the computer that "DOLLAR", when called upon, is going to be a dollar sign. The number 36 is the ASCII code for the dollar sign.

Line #3 takes DOLLAR and formats it into having the capability of being duplicated into a string.

Line #4 is where we have a problem. SPACES normally acts like DOLLARS but with empty spaces instead of dollar signs. In a little while I will show how to create the word SPACES so that it acts this way and add it to the dictionary. Line #4

creates a routine called MARGIN that, when called upon, is a string of 16 spaces.

Line #5 creates a routine that places a dollar sign at the 17th column on the screen by first printing the MARGIN and then the DOLLAR sign and calls it S1.

Line #6 makes a routine like line #5 but with 10 dollar signs and utilizes the DOLLARS routine from line #3 and calls it S2.

Line #7 combines the previous routines in a manner that would create the large "E" on the screen.

Up to this point, all of these routines exist and if compiled from the "execution" screen, would not show anything on the screen. This is analogous to writing a program in BASIC but not RUNNING it.

If this program is compiled on the ZX/TS computer, an error message stating an undefined word (SPACES) has been encountered. If the program works at all, the "E" will be printed without the margin.

The solution is simple! Use the editing feature found in the list on page 23 of the user's documentation to create two new lines between #3 and #4 (SHIFT 9) and then renumber the line numbers from #4 on by increasing their value by 2. Now insert lines #4 and #5 so that the final listing looks as follows:

```
0 ( LARGE LETTER-E)
1 : START EOFF CLS ;
2 : DOLLAR 36 EMIT ;
3 : DOLLARS 0 DO DOLLAR LOOP ;
4 : SPACE 32 EMIT ;
5 : SPACES 0 DO SPACE LOOP ;
6 : MARGIN CR 16 SPACES ;
7 : X1 MARGIN DOLLAR ;
8 : X2 MARGIN 10 DOLLARS ;
9 : E START X2 X1 X1 X2 X1 X1 X2
;
```

In this program, we have used 6 existing commands: EOFF, CLS, EMIT, DO, LOOP and CR to create 9 new commands: START, DOLLAR, DOLLARS, SPACE, SPACES, MARGIN, X1, X2 and E, all of which are (or soon will be) in the FORTH dictionary, just like the existing commands.

You will notice that lines #4 and #5 are formatted exactly like lines #2 and #3. By the way, the CR in line #6 stands for Carriage Return, which causes the print to go to the beginning of the next line every time MARGIN is encountered.

So, as you can see, even though commands don't exist in the PLURI-FORTH language, they can be created by the user to suit the needs of the program.

From the execution mode, you first have to compile the program into machine language by entering "CPL". You will see the cursor in the upper screen scroll through the line numbers and the lines scroll in the lower screen. Every now and then, you may see an "ERROR R" message. Not to worry! "R" stands for redundant and means you are trying to compile a routine under a name where it has already been assigned, either in a previous compilation or it exists in the dictionary as an established dedicated PLURI-FORTH command. Do not assign names to commands that already are in the PLURI-FORTH language.

All that remains is to ENTER the letter "E" to execute the program (from the lower screen). You may first want to delete the word "START" from line #9 before compiling. If you made a mistake in entering the program, START will erase the program from the editor screen as well as erasing the editor screen itself. Once it is lost from the screen, there is no way of getting it back without re-typing it in.

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(STRING\$ CONT.)

"14" for the second prompt. For the first message prompt, enter "HELLO," and "HOW ARE YOU?" for the second.

This routine is valuable for creating graphic strings to be used as separating devices when neat printout is required for various documents. Change the following lines to read as follows:

```
100 PRINT "ENTER CHARACTER(S)"
110 INPUT C$
170 LET A$=A$+C$
```

You can now enter more than one character at a time for a more dramatic effect by entering the characters themselves. Remember, if two characters are inputted and 10 is the response to the prompt "HOW MANY CHARACTERS IN THE STRING?", 20 total characters will result.

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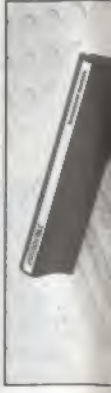
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The program, if it contains errors, will then have to be re-entered. This way, with START deleted, it will only run on the execution screen and can be tested that way. The program still remains on the upper portion (editor screen).

If it runs OK, re-enter START in line #9 and re-compile it. You may want to first enter "FORGET E" before re-compiling. This should remove all the "ERROR R" messages.

If you are entering a program into the editor screen, you may want to compile it before the screen fills up. If you don't, the upper lines will scroll off the screen and are lost. You can compile the program with the "CPL" command as already mentioned from the lower screen or you can do it a line at a time by placing the cursor at the beginning of each line and pressing SHIFT "Q". Remember if a program line extends to the next line, SHIFT "Q" will only compile the 32 characters in that line. The cursor will have to be brought to the next line and the process repeated.

A trivial item of interest - if you execute the program by typing "E" and then pressing the ENTER key, the large E is printed followed by the message "OK" at the next 2 character positions with the cursor at the beginning of the next line.

If you press the BREAK key instead of ENTER, the "OK" message is missing and the cursor is at the next character position.

These programs may seem very elementary in their function with the language being quite more complicated than BASIC. I tend to agree. It takes time and a lot of rhetoric just to explain a few basic concepts. I have yet to see a manual on

FORTH that the raw beginner can really get his teeth into in a short amount of time. The same holds true for machine language but to a greater degree.

It seems that the aspiring FORTH programmer has a lot more to learn compared to BASIC and a longer time will be needed to have his/her efforts rewarded with sophisticated programs.

However, advantages such as speed, multi-tasking, separate data storage and retrieval, input-output control and much more powerful programming capabilities make this a language for the future. We intend to cover as many aspects of FORTH as possible in a tutorial manner presented in language for the beginner. We also encourage any and all reader donations on the subject.

PS - If any of you have the Tree-Forth chip and would like an alphabetized index for the documentation so that you can easily find subjects, write us a letter and send one dollar for postage and handling.

A more formal publication dedicated to FORTH for all computers is called FORTH Dimensions and is published 6 times a year at a cost of \$2.50 per issue - \$15.00/year U.S. - \$27.00/year foreign air.

For more info contact:

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January first became the first month in 46 B.C. when the Roman Emperor Julius Caesar revised the calendar.

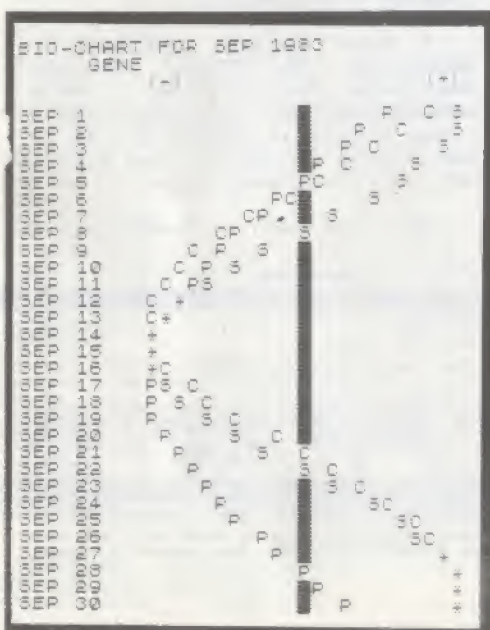
Review of
BOSS Pkg. # 114
Biorhythm - Rorschacht - Reaction

Many of us are fascinated with the concept of discovering various aspects of our person. Subjects ranging from Astrology to IQ tests have been indulged in by the majority of the public.

Package #114 from Synchro-Sette has three programs geared to self-analysis but labeled in the area of pseudo-science.

"BIORHYTHM" is a program that enables the user to chart his or her Biorhythm curves on the screen or to the Timex 2040 printer.

The user enters the pertinent information and then chooses the mode of display or printout.



The <C> curve stands for COGNITIVE which represents the person's mental awareness or intellectual perception state.

The <P> curve stands for PHYSICAL which represents the person's energy levels.

The <S> curve stands for SENSITIVITY which represents the person's emotional level.

The dark line down the center of the curves represents the point of zero as each of these curves intersect it. At this point any level may be thought as being in a null state or in limbo. Critical days occur, so the theory goes when all 3 curves approach or equal zero.

If a person has all 3 curves on the extreme <+> side, all sorts of creativity may occur and if all 3 curves are on the extreme <-> side, listlessness and procrastination can be expected.

If however a person is high in one area and low in another such as being high in the <C> or intellectual curve but low in the <P> or energy state, diverse effects might happen such as being in a state of high creativity but lacking the get-up and go to do anything about it. Sort of a "spirit is willing but the flesh is weak" sort of thing.

We claim no responsibility to anyone's interpretation of the results of this program and ask the user to think of it in the same light as a Horoscope.

To use the program, enter your name for the first prompt. The computer will then ask you whether you want a chart for a single month or for an entire year. If you choose the single month option, you will then be asked for your birth month, date and year, followed by the month and year you wish to see a chart

for.

----- FULL CHART PRINTOUT

The computer will then go into the FAST mode and will finally display from seven to eleven days on the screen. We will call this the "FIRST DISPLAY". If you have a graphics printer such as the 2040, press the "Z" key at this time to obtain a printout of the FIRST DISPLAY. You will soon be able to add the second portion of the chart to give a complete chart for the month.

Press any key except "Z" or BREAK to display another day on the screen. Continue to do this until you observe the last day of the month on the screen. You may now press the "Z" key again and the "SECOND DISPLAY" will be printed right after the first to give the complete chart for the month.

----- TRIPLE INTERSECTIONS

Unlike every other Biorhythm program that I've seen, this one has the capability to perform a search in the FAST mode for days when all three curves intersect. At the beginning of the program when you are asked whether you want a monthly chart or a yearly chart, and you choose the yearly chart, you will then be asked if you want a triple intersection search. If you answer "YES", the program will search for 12 months until it finds a triple intersection and will then display it on the screen. You may scroll the screen, if you wish, as explained previously and press the "Z" key if you want a printout.

If you don't answer "YES" for the triple intersection search, the program will cycle 12 months in the same format as with a single month, allowing you to copy to the printer at any time. It is possible to do a chart for a whole year this way.

"RORSCHACH" is a computer version of the old ink-blot test. Look at the pattern depicted on the screen and determine what it looks like to you.

The pattern will continue to self-draw until the computer runs out of memory.

A good example of the TS-1000's capability for random but symmetrical graphics.

"REACTION" is an excellent method of testing eye to hand coordination and reflex time.

It comes with all the instructions at the beginning of the program but we will go over them again here.

The program will display 5 sets of 5 digit numbers. The numbers are 8 times the normal size and each set will appear only briefly on the screen. AFTER the large number disappears from the screen, you have to enter a number into the keyboard before the word <STOP> flutters on the screen. The number you enter has to be the first number of the first 5 digit set, then the second number of the second digit set and so on up to the 5th digit number of the fifth 5 digit set. As each 5 digit set is displayed, it will be preceded by the number of the cycle and a dash. A sample might be for the first set:

1-29764

If this actually occurred, your response would be to press the <2> key before STOP appeared. On the third set you might see:

3-82855

You should press the <8> key. Easy, huh? To make it a little more difficult, we have entered

a routine into the program that places these large numbers in random row positions of the screen so that you cannot expect to train your eyes at any one screen position expecting the number you are looking for to appear. You will have plenty of time to wait between cycles as it takes 15 seconds for each number to be generated.

Now for the RULES. There are 9 difficulty levels but you do not get to choose the one you want. You automatically start with level 5. If all of your 5 responses are correct, the program will cycle up to the next difficulty level. The effect of this is that the large number will be displayed for a shorter period of time and the amount of response time you have will be shorter therefore making it more difficult to get all 5 correct.

If however you input your response to late or input the incorrect response for any of the large numbers, you will drop a level and the display time and time allowed for your response will become longer making it easier to get all 5 correct.

If you are at level 1 and get an incorrect response the game will be over. If you are at level 9 and get all 5 correct, the game will also be over.

Neither situation should occur because level 1 is rather easy and level 9 is virtually impossible. You should settle in at some level in between and here is where you can tell how you compare with your cohorts. You may find this program a challenge for many hours.

These three programs come on cassette with full documentation. BOSS package #114 sells for 12.95 (10% discount to subscribers) and can be purchased from us.

(EDITOR RAMBLINGS CONT.)

still realize a healthy profit. One of the main reasons for Commodore's success is because they manufacture many of the components themselves which are used not only in their own products but the competition's also.

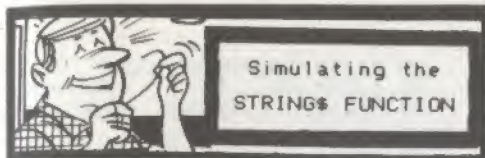
The Apple 2, and many other color computers, use the 6502 microprocessor which is made by Commodore.

===== D OR PHRASE? (DATABASE CONT.)

```

4030 SLOW
4040 INPUT C$
4050 FAST
4060 CLS
4070 FOR N=1 TO LEN A$-LEN C$+1
4080 IF A$(N TO N+LEN C$-1)=C$ THEN
4090 GOTO 4200
4100 PRINT AT 10 0; NOT IN FILE
4110
4120 PAUSE 500
4130 GOTO 100
4200 LET NN=N
4205 FOR A=N TO 1 STEP -1
4210 IF A$(A)=CHR$ 121 THEN GOTO
4230
4220 NEXT A
4230 FOR B=N TO LEN A$
4240 IF A$(B)=CHR$ 111 THEN GOTO
4300
4250 NEXT B
4300 LET D$=A$(A TO B)
4310 FOR N=1 TO LEN D$
4320 IF CODE D$(N)=67 THEN GOTO
4340
4330 NEXT N
4340 GOSUB 4800
4350 FOR N=1 TO LEN D$
4360 IF CODE D$(N)=68 THEN GOTO
4380
4370 NEXT N
4380 GOSUB 4800
4390 FOR N=1 TO LEN D$
4400 IF CODE D$(N)=69 THEN GOTO
4420
4410 NEXT N
4420 GOSUB 4800
4430 FOR N=1 TO LEN D$
4440 IF CODE D$(N)=70 THEN GOTO
4460
4450 NEXT N
4460 GOSUB 4800
4470 PRINT D$(2 TO LEN D$-1)
4480 PAUSE 40000
4490 IF INKEY$="Z" THEN COPY
4500 CLS
4510 FOR N=NN+1 TO LEN A$-LEN C$
+1
4520 GOTO 4080
4530 STOP
4540 PRINT D$(2 TO N-1)
4550 PRINT
4560 LET D$=D$(N TO LEN D$)
4570 RETURN
5000 REM SAVE DATA ON CASSETTE
5010 PRINT "ENTER FILE NAME, P
REPAIR", "RECORDER AND PRESS ENTE
R ..."
5020 SLOW
5030 INPUT Z$
5040 SAVE Z$
5050 GOTO 100

```

One feature not included in Sinclair BASIC that has been sorely missed by me is the STRING\$ function. To give you an idea what can be done with this command, let us say that we wanted a line to appear on the screen or in print that had 32 asterisks in a row. We could enter the line:

```
10 PRINT "*****
*****"
```

To achieve this effect over and over again, we could put the asterisks in a string variable such as the following:

```
10 LET A$ = "*****
*****"
```

Now, whenever we want 32 asterisks to appear, we can just tell the computer to PRINT A\$.

This is, of course, cumbersome, particularly when we want large amounts of characters. The function format for other computers is as follows:

```
10 LET A$ = STRING$ (n,c)
```

Where "n" is the amount of characters you want in the string and "c" is the character's code number. The character itself can be used as long as it is surrounded by quotation marks. Either of the following lines would produce the same results:

```
10 PRINT STRING$ (16,38)
```

```
10 PRINT STRING$ (16,"A")
```

If this function were legal on the ZX/TS machines, 16 "A"s in a row would appear on the

screen when the program was RUN.

We can achieve this effect, but it requires more program lines. Enter the following program:

```
10 REM SIMULATING THE
    STRING$
    FUNCTION
20 PRINT "THE STRING FUNCTION
N IN OTHER COMPUTER BASICS IS
REPRESENTED BY THE FORMULAE -"
30 PRINT "PRINT STRING$(N,C)"
40 PRINT "WHERE "N" = THE N
NUMBER OF CHARACTERS, "C" = THE CH
ARACTER CODE"
50 PRINT "THIS EFFECT CAN BE
SIMULATED ON THE ZX/TS COMPUTER
BUT...PRESS ENTER FOR EXAMPLE:"
70 PAUSE 40000
80 CLS
90 SLOW
100 PRINT "ENTER CHARACTER CODE
FROM MANUAL"
110 INPUT C
120 PRINT "HOW MANY CHARACTER
S IN THE STRING?"
130 INPUT N
140 FAST
150 LET A$=""
160 FOR A=1 TO N
170 LET A$=A$+CHR$ C
180 NEXT A
190 CLS
200 PRINT A$
210 PAUSE 40000
220 CLS
230 PRINT "ENTER FIRST MESSAGE:"
240 SLOW
250 INPUT B$
260 PRINT "ENTER SECOND MESSA
GE:"
270 INPUT C$
280 CLS
290 PRINT B$+A$+C$
310 FAST
320 PAUSE 40000
330 CLS
340 RUN
```

RUN this program and consult the Character Code portion of the User's Manual. The portion of programs between lines 100 to 200 create the string and display it on the screen. Experiment with "n" values up to 704.

The routine between 230 to 300 takes the string and allows you to input your own message in two parts and have the string separate those two parts. For the first prompt enter "131" and



LETTERS TO THE EDITOR

Dear Eddie,

Do you mind if I call you Eddie? "Ed" sounds just a little too abbreviated.

Well anyway, Eddie, can you ask the old Professor how the Applesoft BASIC command "SPEED" (for printing speed control) can be used on the ZX-81? It makes programs a lot easier to read along with.

Also, does the BOSS package #0004 have print-out capabilities? You don't clearly state whether it does or not.

You run a good magazine and I enjoy it and the cassettes very much.

By the way, do you mind if I call you Edward?

Thanks,

Adam Swick - Gordon NE

Dear Adam,

"Ed" is actually an acronym for Educational Disclaimer. In other words, you can't hold me liable for anything I tell you.

I asked the old Professor about your query regarding the Applesoft SPEED command. He immediately took it as a challenge and came up with this program for you:

```

10 PRINT "INPUT MESSAGE"
20 INPUT A$
30 PRINT "ENTER SPEED (0
TO 9) :":
40 INPUT S
50 CLS
60 FOR N=1 TO LEN A$
70 PRINT A$(N);
80 FOR I=1 TO 10-S
90 NEXT I
100 NEXT N
110 GOTO 30

```

The BOSS package #0004 (Home Budget) does not have print-out capabilities. It was written before any printers were available for the ZX/TS machines. Of course, it is not that difficult to BREAK the program at strategic points and press the "Z" key to COPY the screen.

Another method involves inserting 2 lines at strategic program locations that read:

```

n1 PAUSE 50000
n2 IF INKEY$="Z" THEN COPY

```

"n1" is the first program line that you would assign the proper number to and "n2" the following line. When the screen holds data that may be needed to be printed, the program will pause. The user presses the "Z" key if printout is desired. Any other pressed key (except BREAK) will continue the program without printout. This method can be used in just about any BASIC program where printout is desired.

A more difficult method involves using the LPRINT command. LPRINT to the printer does not work with TABs the same way that PRINT to the screen does. This, the old Professor assures me, will be the subject of an up-coming tutorial.

We will be coming out with a revised version of the Home Budget programs that includes printout capabilities. - Ed

Dear Ed,

All programs on this month's tape (June/83) load and run on my computer. However, the message on the "GRAN MARQUEE" program is unreadable because many of the letters are scrambled, (ie. "O" is "W", "R" is "Z", etc.).

The messages I enter have the same problem. Can you tell from this what my problem can be?

We thoroughly enjoy your magazine and tapes so far.

Sincerely,
J.W. Alexander - Lebanon, NE

Dear J.W.,

First of all, try the other side of the tape (all programs are on each side). If you get the same result, the problem is probably a subtle defect in the computer or RAMpack (chances are the RAMpack).

See if you can test the tape on another computer and RAMpack, if you know someone else who has one. The routine that generates the large letters at the quick speed is written in machine code. Make a copy if you like and send it back to me and I'll see if it does the same thing on my computers.

No one else has had this effect that I know of, and of course if it is a defective tape we will replace it.

Let us know the results, one way or the other - Ed

Dear Ed,

You have my vote for changing all the bi-monthly cassette

programs to 16K.

Paul Redlich - N. Suburban IL

Dear Ed,

Please enter my vote for more 16K programs and fewer 2K - and while I'm at it, more utility and fewer game programs.

Austin White - Lexington Pk., MD

Dear Ed,

In your June-July (83) issue, you asked for responses in the "2K OR NOT 2K, THAT IS THE QUESTION". I am for the change!

George Lipscomb - APO, NY

Dear Ed,

You raised the question in your June/July issue and I'd like to contribute an answer. I thought that your switch to 2K programs from 1K (October/82) was a good idea. You had about 2 1/2 to 3 times as much net user RAM to work with, allowing for reasonably good programs. 1K was just too restricting.

But please don't phase out the 2K programs! Their shortness makes them easier for beginners and students of programming to use as tutorials. We will always have beginners. Longer programs can overwhelm any but the most experienced of your readers.

Ed, your magazine in the last year and a half has already grown more sophisticated on the whole than you may fancy. I like it that way. Many of your subscribers who started off with you have grown with you. They probably appreciate your suggestion and take a full diet of 16K programs in stride. But

of 16K programs in stride. But you will turn off beginners.

I think that it is just common sense to realize that you cannot maintain a growing, healthy list of subscribers drawing from knowledgeable ones alone. You must, for your own benefit, set aside a reasonably good proportion of your magazine for the neophytes.

Keep those 2K programs!

Very Truly Yours,

Warren Fricke - Depew, NY

Dear "2K OR NOT 2K" Respodents,

A real problem we have here. While many of us feel the smaller programs are trivial or redundant, there is and probably will always be a large proportion that are in that category Mr. Fricke describes.

I have tried to make this magazine a publication that can be easily understood by the beginner and yet appreciated by the more advanced computerist with an emphasis on tutorial. Time and time again, I am guilty of expecting the beginner to understand concepts without explanation, simply because I sub-consciously felt them edundant.

The real reason I wanted to phase out the 2K programs was not because of the program size itself being too small but because the 2K programs have to be written on a 2K computer without the RAMpack. If they were written with the 16K RAMpack attached, a memory-checking routine is attached to the program that makes it impossible to load back into a 2K machine.

It is much simpler to write all the programs with the 16K RAMpack attached to the

computer.

What I really want to know is if anyone out there has a 2K machine and does not intend to get a 16K RAMpack. If this is the case, none of the programs, including the 2K ones, will load into his or her computer. I don't think anyone fits this situation, as the curiosity regarding the 16K programs has caused most persons to purchase the RAMpack.

No problem including short programs of 1, 2 or 3K on the cassettes. I consider it a real challenge to write a sophisticated program with only 2K of memory to work with. People have told us that they thought many of the 2K programs were actually 16K.

Mr. Fricke brings up some valid points regarding short programs for tutorials. It is much easier for a student to visualize a single or a few effects from a short program than have his/her mind boggled by examining a program listing with many routines as long as a roll of bathroom tissue.

Besides, with the phase-out of the 1000, and with the 1500 and 2000 soon coming our way, the 2K loading problem will not exist for any new purchasers, anyway.

So once again, if there are any pure and dedicated 2K machine users out there, let us know!

2K or not 2K, the answer is still undecided - Ed.



More than one million Earths would be required to match the volume of the sun.

NEWS OF SCHOOLS

Saving Tax Dollars

Budget-conscious school administrators have found a way to cut costs of paper towels by up to 30%. The answer is a device that allows the use of economical roll towels without the expense of replacing existing single-fold towel dispensers. Made by the Scott Paper



One school district saved \$4,500 in one year.

Co., the "ASF Roll Towel Adapter" is attached to an existing single-fold dispensing cabinet in just minutes. One school district saved \$2,500 in one year, a cost reduction of 30%. Another, larger school system reduced towel costs by nearly \$4,500. That, too, was a 30% savings. Another advantage of the Scott "ASF Roll Towel Adapter" is lower maintenance costs. Single-fold cabinets can hold 110 "hand dries", but the conversion to roll towels increased capacity to 230 "hand dries". That reduces the frequency with which cabinets must be refilled, further saving money by cutting labor costs.

Your Public Schools

by Willard H. McGuire, president
National Education Association



Values Taught In Our Public Schools

Many religious and spiritual values are taught in today's public schools.

You may be surprised by that statement since some media have carried stories from ultra-conservatives alleging the opposite.

Nevertheless, look at the values that are taught in school: stealing isn't condoned, respect is taught, honesty is demanded, plagiarism isn't tolerated, and the rights of individuals are respected.

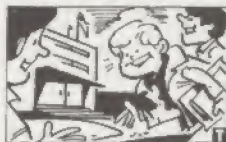
Perhaps the most important reason for values education in schools is to help students learn how to make responsible decisions to solve human problems. Future problem-solvers will have to deal with many issues that affect all of us in the United States and the rest of the world—issues such as increasing technology and nuclear weapons, the pollution of the atmosphere, the likelihood of world hunger, medical advances to prolong life.

Parents are often disappointed when they realize that their children's values only faintly resemble their own and that their own attitudes and lifestyles are not acceptable to their offspring. Despite these difficulties, parents should not

become discouraged. Here are some ways parents can explore values with their children:

- Try to define your own beliefs and attitudes for your children.
- Talk with your children about their values and your own to discover which ones you hold in common and which are different.
- If your child's school offers courses in values, talk with teachers to find out the purposes of the courses and what the teachers are trying to achieve.
- Discuss with teachers any suggestions you may have about values education, such as a different emphasis or approach.

In these ways you can open up or improve communication with your children and teachers. Improved communication about beliefs and attitudes will mean better understanding for all—children, parents and teachers.



The lungfish can live out of water in a state of suspended animation for three years.



The world is not round. It is an oblate spheroid, flattened at the poles and bulging at the equator.



The rings of a tree are always farther apart on the tree's southern side.



The early kings of France stuck three hairs plucked from their beards in the seal of official papers to lend them greater sanction.



Jupiter is the largest planet and it has the shortest day. It completes a rotation in nine hours and fifty-nine minutes.



The Maya Indians filed their front teeth to points and drilled holes in them so that they could be embellished with precious gems.



The largest painting ever painted was the "Panorama of the Mississippi," completed in by John Banvard in 1846. It took spectators two hours to view all of the 12-foot high, 16,000 foot long picture.

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